WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising silicon over an insulating substrate;

forming a chemical oxide film on a surface of the semiconductor film comprising silicon as a pretreatment; and

doping the semiconductor film comprising silicon with impurity ions.

2. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising silicon over an insulating substrate;

terminating dangling bonds on a surface of the semiconductor film comprising silicon with oxygen as a pretreatment; and

doping the semiconductor film comprising silicon with impurity ions.

3. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising silicon over an insulating substrate;

terminating dangling bonds on a surface of the semiconductor film comprising silicon with an element to be bonded with bonding energy higher than that of Si-H bonds as a pretreatment; and

doping the semiconductor film comprising silicon with impurity ions.

4. A method of manufacturing a semiconductor device according to claim 1, wherein the semiconductor film comprising silicon is an amorphous semiconductor film comprising silicon.

5. A method of manufacturing a semiconductor device according to claim 2, wherein the semiconductor film comprising silicon is an amorphous semiconductor film comprising silicon.

6. A method of manufacturing a semiconductor device according to claim 3, wherein the semiconductor film comprising silicon is an amorphous semiconductor film comprising silicon.

7. A method of manufacturing a semiconductor device according to claim 1, wherein an amorphous semiconductor film comprising silicon is deposited as the semiconductor film comprising silicon, and a heat treatment is conducted to form a polycrystalline semiconductor film comprising silicon.

8. A method of manufacturing a semiconductor device according to claim 2, wherein an amorphous semiconductor film comprising silicon is deposited as the semiconductor film comprising silicon, and a heat treatment is conducted to form a polycrystalline semiconductor film comprising silicon.

9. A method of manufacturing a semiconductor device according to claim 3, wherein an amorphous semiconductor film comprising silicon is deposited as the semiconductor film comprising silicon, and a heat treatment is conducted to form a polycrystalline semiconductor film comprising silicon.

10. A method of manufacturing a semiconductor device according to claim 1, wherein an amorphous semiconductor film comprising silicon is deposited as the semiconductor film comprising silicon, a catalytic element having an effect of accelerating crystallization is applied to the silicon-containing amorphous semiconductor film, and a heat treatment is conducted to form a silicon-containing crystalline semiconductor film.

11. A method of manufacturing a semiconductor device according to claim 2, wherein an amorphous semiconductor film comprising silicon is deposited as the semiconductor film comprising silicon, a catalytic element having an effect of accelerating crystallization is applied to the amorphous semiconductor film comprising silicon, and a heat treatment is conducted to form a crystalline semiconductor film comprising silicon.

12. A method of manufacturing a semiconductor device according to claim 3, wherein an amorphous semiconductor film comprising silicon is deposited as the semiconductor film comprising silicon, a catalytic element having an effect of accelerating crystallization is applied to the amorphous semiconductor film comprising silicon, and a heat treatment is conducted to form a crystalline semiconductor film comprising silicon.

13. A method of manufacturing a semiconductor device according to claim 1, wherein a material including hydrogen is used as an ion source for the impurity ions used in the doping step.

14. A method of manufacturing a semiconductor device according to claim 2, wherein a material including hydrogen is used as an ion source for the impurity ions used in the doping

step.

15. A method of manufacturing a semiconductor device according to claim 3, wherein a material including hydrogen is used as an ion source for the impurity ions used in the doping step.

16. A method of manufacturing a semiconductor device according to claim 1, wherein the doping step allows channel doping to be implemented.

17. A method of manufacturing a semiconductor device according to claim 2, wherein the doping step allows channel doping to be implemented.

18. A method of manufacturing a semiconductor device according to claim 3, wherein the doping step allows channel doping to be implemented.

19. A method of manufacturing a semiconductor device according to claim 1, wherein the chemical oxide film is formed by a treatment with ozone water.

20. A method of manufacturing a semiconductor device according to claim 1, wherein the chemical oxide film is formed by a treatment with a hydrogen peroxide solution.

21. A method of manufacturing a semiconductor device according to claim 1, wherein the chemical oxide film is formed by an ozone treatment through ultraviolet irradiation in an atmosphere containing oxygen.

22. A method of manufacturing a semiconductor device according to claim 10, wherein at least one element selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au is added as the catalytic element.

23. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising silicon over an insulating substrate;

forming a chemical oxide film on a surface of the semiconductor film comprising silicon as a pretreatment;

doping the semiconductor film comprising silicon with impurity ions;

patterning the semiconductor film to form at least one active layer;

forming a gate insulating film over the active layer; and

forming a gate electrode over the semiconductor film with the gate insulating film interposed therebetween,

wherein the chemical oxide film is formed by a treatment with at least one material selected from the group of: ozone water and a hydrogen peroxide solution.

24. A method of manufacturing a semiconductor device according to claim 1, wherein the semiconductor device is at least one device selected from the group of: a personal computer, a video camera, a mobile computer, a goggle type display device, a DVD player, a CD player, a portable telephone, a front type projector and a rear type projector.

25. A method of manufacturing a semiconductor device according to claim 2, wherein the semiconductor device is at least one device selected from the group of: a personal

computer, a video camera, a mobile computer, a goggle type display device, a DVD player, a CD player, a portable telephone, a front type projector and a rear type projector.

26. A method of manufacturing a semiconductor device according to claim 3, wherein the semiconductor device is at least one device selected from the group of: a personal computer, a video camera, a mobile computer, a goggle type display device, a DVD player, a CD player, a portable telephone, a front type projector and a rear type projector.

27. A method of manufacturing a semiconductor device according to claim 23, wherein the semiconductor device is at least one device selected from the group of: a personal computer, a video camera, a mobile computer, a goggle type display device, a DVD player, a CD player, a portable telephone, a front type projector and a rear type projector.